AMENDMENTS TO THE CLAIMS

Claims 1-4 (Canceled)

Claim 5 (Currently Amended): An optical information recording medium having a multilayer structure comprising at least a lower protective layer, a phase-change type optical recording layer, an upper protective layer and a reflective layer, on a substrate, for overwrite recording by modulation of light intensity of at least two levels, so that a crystalline state is an unrecorded state, and an amorphous state is a recorded state, wherein

the phase-change type optical recording layer has a composition of $Zn_zGe_y(Sb_xTe_{1-x})_{1-y-z}$, where $0.65 \leqq x \leqq 0.85$, $0.01 \leqq y \leqq 0.20$, and $0.01 \leqq z \leqq 0.15$, and comprises as the main component, an SbTe alloy of the ~~SbTe~~ $Sb_{70}Te_{30}$ eutectic composition or a composition including an excess amount of Sb over the ~~SbTe~~ $Sb_{70}Te_{30}$ eutectic composition.

Claim 6 (Original): The optical information recording medium according to Claim 5, wherein $0.65 \leqq x \leqq 0.80$, $0.01 \leqq y \leqq 0.15$, and $0.01 \leqq z \leqq 0.10$.

Claim 7 (Original): The optical information recording medium according to Claim 5, wherein

the phase-change type optical recording layer has a thickness of from 15 to 30 nm,

the upper protective layer has a thickness of from 10 to 50 nm, and

containing at least 90 atomic % of Au, Ag or Al.

Claim 8 (Original): The optical information recording medium according to Claim 5, wherein the lower protective layer has a thickness of from 50 to 500 nm, of which a portion of from 1 to 10 nm on the side contacting the recording layer, is made of a mixture comprising a chalcogen compound and a heat resistant compound having a decomposition temperature or melting point of at least 1,000°C which is not a chalcogen compound, and the rest is made of a heat resistant compound of a different or same type as said heat resistant compound.

Claim 9 (Previously Presented): The optical information recording medium according to Claim 5, wherein to carry out an initialization operation by irradiating an energy beam for crystallization, after forming the phase-change type optical recording layer, the recording layer is locally melted and crystallized during resolidification.

Claim 10 (Previously Presented): The optical information recording medium according to Claim 5, which is a recording medium whereby mark length modulation recording and erasing are carried out by modulating a laser power among at least 3 power levels wherein to form inter-mark portions, erasing power Pe capable of recrystallizing amorphous mark portions is applied, and to form mark portions having a length nT where T is a clock period and n is an integer of at least 2, writing power Pw and bias power Pb are applied in such a manner that when the time for applying writing power Pw is represented by $\alpha_1 T$, $\alpha_2 T$, ..., $\alpha_m T$, and the time for applying bias power Pb is represented by $\beta_1 T$, $\beta_2 T$, ..., $\beta_m T$, the laser application period is divided into m pulses in a sequence of $\alpha_1 T$, $\beta_1 T$, $\alpha_2 T$, $\beta_2 T$, ..., $\alpha_m T$, $\beta_m T$ to satisfy the following formulae:

when $2 \leqq i \leqq m-1$, $\alpha_i \leqq \beta_i$;

$m = n-k$, where k is an integer of $0 \leqq k \leqq 2$, provided that $n_{min}-k \geqq 1$, where n_{min} is the minimum value of n; and

$\alpha_1+\beta_1+ \ldots +\alpha_m+\beta_m = n-j$, where j is a real number of $0 \leqq j \leqq 2$;

and under such conditions that $Pw > Pe$, and $0 < Pb \leqq 0.5Pe$, provided that when $i = m$, $0 < Pb \leqq Pe$.

Claim 11 (Original): The optical information recording medium according to Claim 10, wherein $0 < Pb \leqq 0.2Pe$, provided that when i is m, $0 < Pb \leqq Pe$, and when $2 \leqq i \leqq m-1$, $\alpha_i+\beta_i = 1.0$, and $0.05 < \alpha_i \leqq 0.5$.

Claim 12 (Previously Presented): An optical recording method, which comprises carrying out mark length modulation recording and erasing on the optical information recording medium as defined in Claim 5 by modulating a laser power among at least 3 power levels, wherein to form inter-mark portions, erasing power Pe capable of recrystallizing amorphous mark portions is applied, and to form mark portions having a length nT where T is a clock period and n is an integer of at least 2, writing power Pw and bias power Pb are applied in such a manner that when the time for applying writing power Pw is represented by $\alpha_1 T$, $\alpha_2 T$, ..., $\alpha_m T$, and the time for applying bias power Pb is represented by $\beta_1 T$, $\beta_2 T$, ..., $\beta_m T$, the laser application period is divided into m pulses in a sequence of $\alpha_1 T$, $\beta_1 T$, $\alpha_2 T$, $\beta_2 T$, ... $\alpha_m T$, $\beta_m T$ to satisfy the following formulae:

when $2 \leqq i \leqq m-1$, $\alpha_i \leqq \beta_i$;

$m = n-k$, where k is an integer of $0 \leqq k \leqq 2$, provided that $n_{min}-k \geqq 1$, where n_{min} is the minimum value of n; and

$\alpha_1+\beta_1+ \ldots +\alpha_m+\beta_m = n-j$, where j is a real number of $0 \leqq j \leqq 2$;

and under such conditions that $Pw > Pe$, and $0 < Pb \leqq 0.5Pe$, provided that when $i = m$, $0 < Pb \leqq Pe$.

Claim 13 (Original): The optical recording method according to Claim 12, wherein $0 < Pb \leqq 0.2Pe$, provided that when i is m, $0 < Pb \leqq Pe$, and when $2 \leqq i \leqq m-1$, $\alpha_i \cdot \beta_i = 1.0$, and $0.05 < \alpha_i \leqq 0.5$.

Claims 14-21 (Canceled)

Claim 22 (Previously Presented): The optical information recording medium according to Claim 5, further comprising a protective coating layer made of an ultraviolet curable or thermosetting resin formed on top of said reflective layer, and wherein said lower and upper protective layers are made of a mixture of ZnS and SiO_2.